06.28.05

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	: Jason P. Brenden	
Appln. No.	: 10/619,802	
Filed	: July 15, 2003	Group Art Unit: 2816
Title	: VOICE COIL MOTOR POWER AMPLIFIER	Examiner: Wells, Kenneth B.
Docket No.	: V44.12-0155	

EXPRESS MAIL COVER SHEET

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SENT VIA EXPRESS MAIL
Express Mail No. EV655621399US

The following papers are being transmitted via **EXPRESS MAIL** to the U.S. Patent and Trademark Office on the date shown below:

1. Fee Calculation Form with attached check for $500.00;
2. Brief for Appellant with Appendix A.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: 6/27/05

By Dina M Khaled

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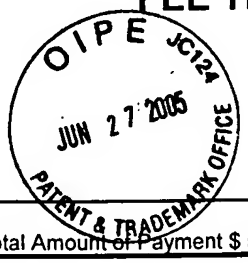
DMK:kmm:**bmg**

FEE TRANSMITTAL



Total Amount of Payment $ 500.00

Complete if Known	
Application No.	10/619,802
Filing Date	July 15, 2003
First Named Inventor	Jason P. Brenden
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Examiner Name	Kenneth B. Wells
Atty. Docket Number	V44.12-0155

METHOD OF PAYMENT (Check One)

1. [X] The Commissioner is hereby authorized to charge any additional fee required under 37 C.F.R. 1.16 and 1.17 and credit any over payments to Deposit Account No.11-0982. Deposit Account Name: Kinney & Lange, P.A. A duplicate copy of this communication is enclosed.

2. [X] Check Enclosed

FEE CALCULATION

1. BASIC FILING FEE

Appn. Type PD.	FILING FEE FEE/SMALL	SEARCH FEES FEE/SMALL	EXAM FEES FEE/SMALL	FEES
Utility	300 / 150	500 / 250	200 / 100	_
Design	200 / 100	100 / 50	130 / 65	_
Reissue	300 / 150	500 / 250	600 / 300	_
Provisional	200 / 100	-0- / -0-	-0- / -0-	_

Subtotal (1) $-0-

2. EXTRA CLAIM FEES

	Number Claims		Prior		Extra		Fee from Fee Paid Below		
Total	_	-	_	=	_	X	_	=	_
Indep.	_	-	_	=	_	X	_	=	_
Multiple Dependent Claims							_	=	_

Insert 3 and 20, or number previously paid if greater; Reissue see below

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple Dependent Claim
1204	200	2204	100	Reissue Independent Claims Over Original Patent
1205	50	2205	25	Reissue claims in excess of 20 and over original patent

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 small) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 C.F.R. 1.16(s). $-0-

Subtotal (2) $-0-

FEE CALCULATION (Continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee paid
1051	130	2051	65	Surcharge - Late filing fee or oath	_
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	_
1053	130	1053	130	Non-English specification	_
1812	2,520	1812	2,520	For Filing a Request for Reexamination	_
1251	120	2251	60	Extension for reply within first month	_
1252	450	2252	225	Extension for reply within second month	_
1253	1,020	2253	510	Extension for reply within third month	_
1254	1,590	2254	795	Extension for reply within fourth month	_
1255	2,160	2255	1,080	Extension for reply within fifth month	_
1402	500	2402	250	Filing a brief in support of an appeal	500
1403	1,000	2403	500	Request for oral hearing	_
1814	130	2814	65	Terminal Disclaimer Fee	_
1452	500	2452	250	Petition to revive - unavoidable	_
1453	1,500	2453	750	Petition to revive - unintentional	_
1501	1,400	2501	700	Utility/Reissue issue fee	_
1502	800	2502	400	Design issue fee	_
1460	130	1460	130	Petitions to the Commissioner	_
1807	50	1807	50	Petitions related to provisional applications	_
1806	180	1806	180	Submission of Information Disclosure Statement	_
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	_
1801	790	2801	395	Request for Continued Examination (RCE)	_

Other fee (specify) _____ _

Subtotal (3) $500.00

Signature Dina M Khaled

Dina M. Khaled

Reg. No. 52,761

Date 6/27/05

Deposit Account No. 11-0982

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Jason P. Brenden	Appeal No.
Appln. No.	:	10/619,802	
Filed	:	July 15, 2003	Group Art Unit: 2816
Title	:	VOICE COIL MOTOR POWER AMPLIFIER	Examiner: Wells, Kenneth B.
Docket No.	:	V44.12-0155	

BRIEF FOR APPELLANT

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

SENT VIA EXPRESS MAIL

Express Mail No.: EV655621399US

This is an appeal from an Office Action dated January 25, 2005, in which claims 10, 11, 13 and 22 were finally rejected; claims 14-21 were objected to but indicated to be allowable if rewritten in independent form; and claims 1-9 and 23 were allowed.

Real Party in Interest

The real party in interest is Agere Systems Inc., a corporation of the State of Delaware having an office in Allentown, Pennsylvania, who is the owner of the entire right, title and interest in the application.

Related Appeals and Interferences

There are no known related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of the Claims

I. Total number of claims in the application

Claims in the application are: 1-23, inclusive.

II. Status of all the claims

A. Claims canceled: 12

B. Claims withdrawn but not canceled: None.

C. Claims pending: 1-11 and 13-23.

D. Claims allowed: 1-9 and 23.

E. Claims rejected: 10, 11, 13 and 22.

F. Claims objected: 14-21.

III. Claims on appeal

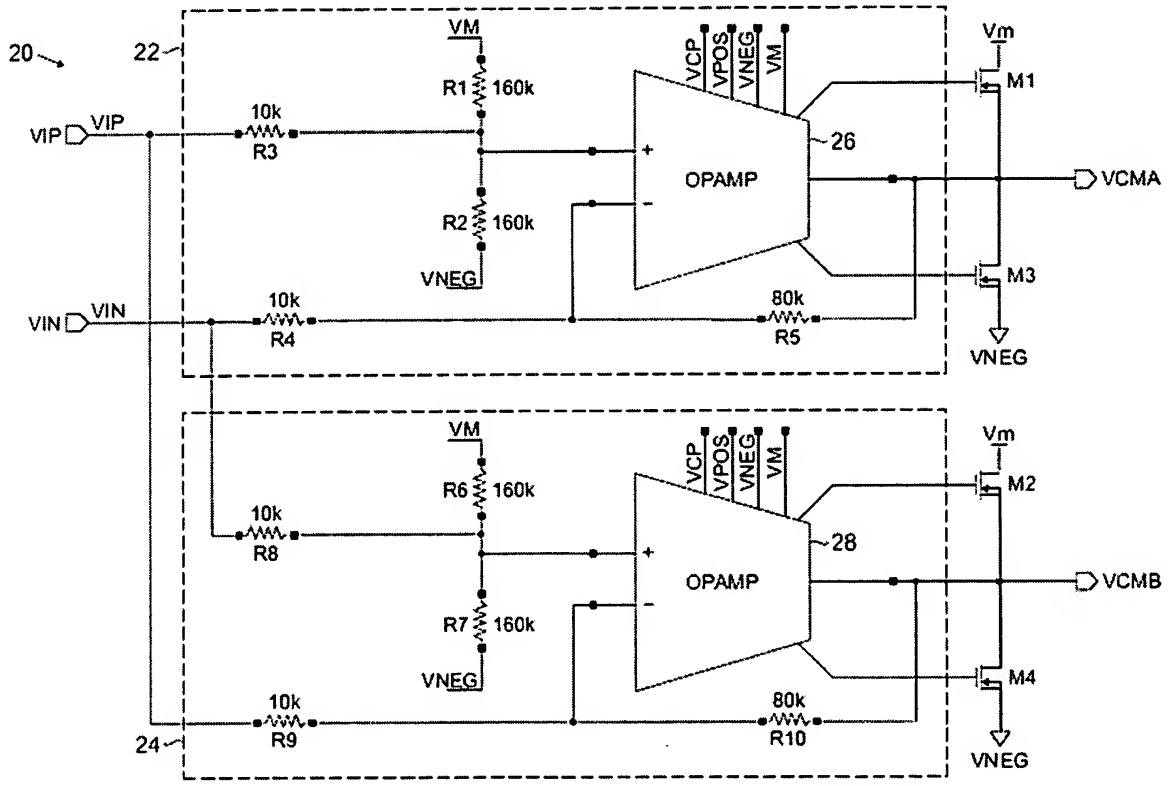
A. The claims on appeal are: 10, 11, 13, and 22.

Status of Amendments

A Response After Final was filed on March 25, 2005, presenting arguments for the allowance of all of the pending claims. As noted in an Advisory Action mailed on April 5, 2005, the Examiner considered the Response After Final, but found it to not place the application in condition for allowance.

Summary of the Claimed Subject Matter

Independent claim 10 is directed to a voice coil motor control circuit for controlling current through a voice coil motor. An exemplary voice coil motor control circuit (20) according to claim 10 is illustrated in FIG. 2 shown below.



The voice coil motor control circuit (20) includes first and second input signal nodes (VIN and VIP) for receiving input signals and first and second voice coil motor nodes (VCMA and VCMB) for connection to the voice coil motor. See, e.g., page 4, lines 3-23. The control circuit

(20) also includes an H-bridge circuit having a first transistor (M1), a second transistor (M2), a third transistor (M3), and a fourth transistor (M4). The first transistor (M1) has a conduction path connected between a first voltage supply node (VM) and the first voice coil motor node (VCMA) and a control region for controlling conduction through the conduction path. The second transistor (M2) has a conduction path connected between the first voltage supply node (VM) and the second voice coil motor node (VCMB) and a control region for controlling conduction through the conduction path. The third transistor (M3) has a conduction path connected between the first voice coil motor node (VCMA) and a second voltage supply node (VNEG) and a control region for controlling conduction through the conduction path. The fourth transistor (M4) has a conduction path connected between the second voice coil motor node (VCMB) and the second voltage supply node (VNEG) and a control region for controlling conduction through the conduction path. See, e.g., page 3, lines 15-24 (with reference to similar H-bridge circuit 12 of FIG. 1).

The voice coil motor control circuit (20) of claim 10 further includes a first power amplifier circuit (22) and a second power amplifier circuit (24). See, e.g., page 4, lines 3-6. The first power amplifier circuit (22) includes a **single** operational amplifier (26) connected to the first voice coil motor node (VCMA) and to the control regions of the first and third transistors (M1 and M3). See, e.g., page 4, lines 6-7; page 5, lines 5-6 and 11-16; and page 10, lines 16-17 ("Because a **single** amplifier is used is used to drive each half bridge circuit, the circuit occupies a small amount of silicon die area."). Thus, this single operational amplifier (26) allows for a reduction in die area, manufacturing costs, power consumption, and power dissipation over prior art designs. The first power amplifier circuit (22) further includes a feedback network (R1-R5) connected to the first and second input nodes (VIP and VIN) and the operational amplifier (26). See, e.g., page 4, lines 6-15.

Similarly, the second power amplifier circuit (24) includes a **single** operational amplifier (28) connected to the second voice coil motor node (VCMB) and the control regions of the second and fourth transistors (M2 and M4), and further includes a feedback network (R6-R10) connected to the first and second input signal nodes (VIP and VIN) and the operational amplifier (26). See, e.g., page 4, lines 3-8 and 16-23; page 5, lines 5-6 and 11-16; and page 10, lines 16-17.

Claim 11, which depends from claim 10, further specifies that each of the transistors (M1, M2, M3, and M4) are NDMOS transistors having a source, a drain, a gate and a body, wherein the source is connected to the body, the conduction path is between the drain and

the source, and the gate is the control region. See, e.g., page 3, lines 15-17.

Claim 13, which depends from claim 10, further specifies that each of the feedback networks (R1-R5 and R6-R10) is a resistive feedback circuit for setting the gain and output voltage of the corresponding power amplifier (22 and 24). See, e.g., page 4, line 24 - page 5, line 4.

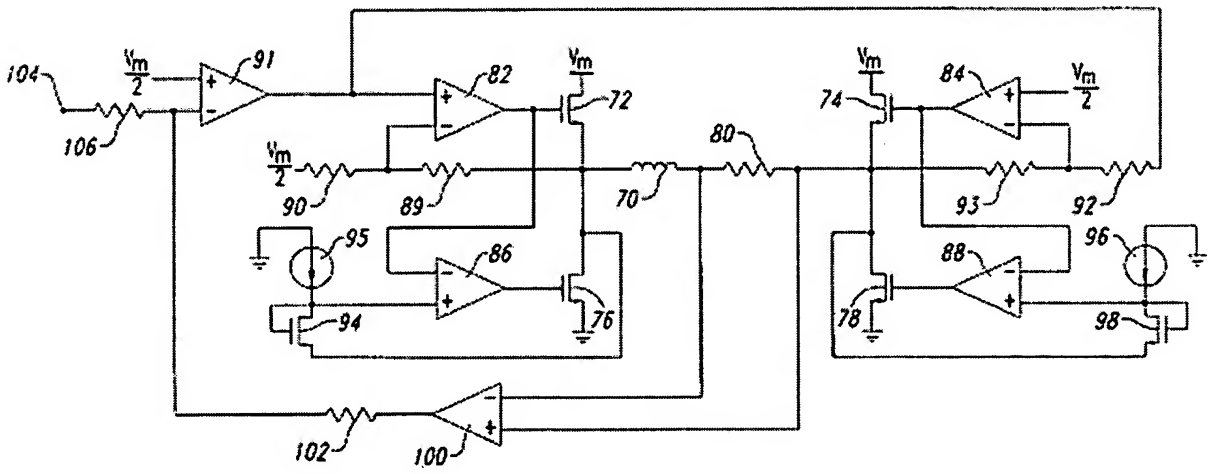
Claim 22, which depends from claim 10, further specifies that the control circuit (10) is implemented as an integrated circuit (IC). See, e.g., page 1, lines 9-11.

Description of References Relied Upon by the Examiner

The Examiner has relied upon two references in rejecting claims 10, 11, 13, and 22, namely, Sziebert, U.S. Patent No. 6,064,174 ("Sziebert") and Skelton et al., U.S. Patent No. 5,257,175 ("Skelton").

I. Sziebert

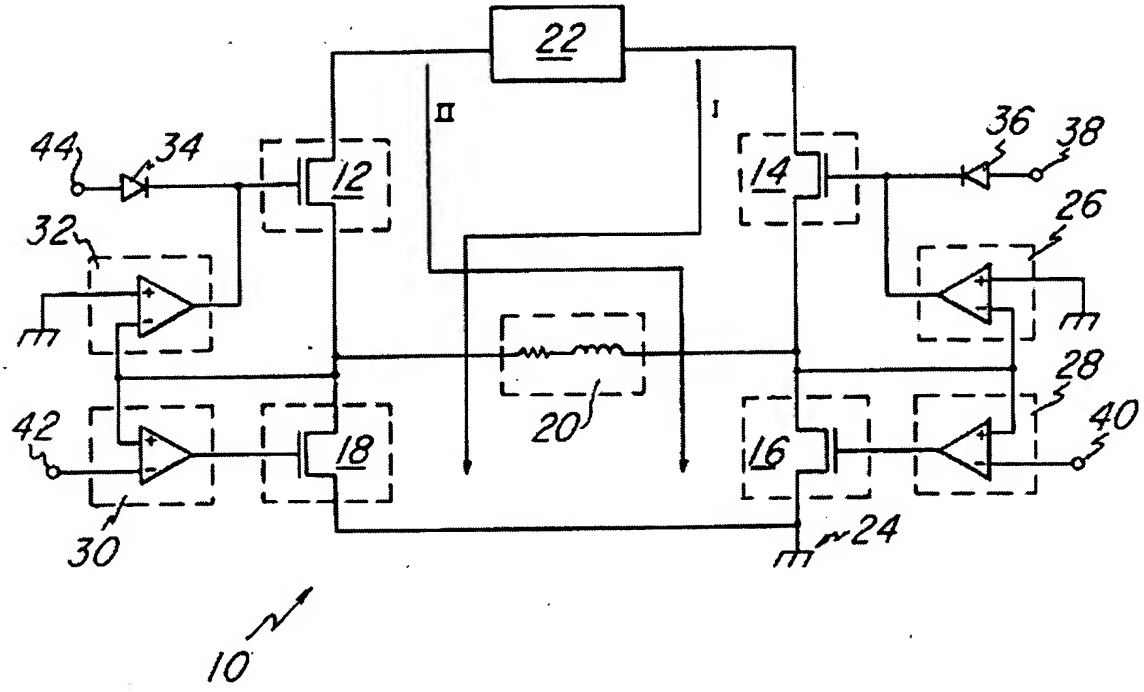
"A circuit diagram of the VCM driver 68 coupled to an inductive coil 70 of the motor 56 is shown in FIG. 3" (reproduced below). See column 3, lines 47-48.



"The coil 70 is driven by an H-bridge circuit that includes first and second high-side transistors 72, 74 and first and second low-side transistors 76, 78." See column 3, lines 48-51. "The first and second high-side transistors 72, 74 are driven by **first and second differential amplifiers** 82, 84 coupled to the gate terminals of the first and second high-side transistors, respectively. Similarly, gate terminals of the first and second low-side transistors 76, 78 are coupled to and driven by **first and second low-side differential amplifiers** 86, 88, respectively." See column 4, lines 12-18.

II. Skelton

"FIG. 3 is a block diagram illustrating the preferred embodiment of the invention while FIG. 4a [shown below] is an electrical schematic diagram of the block diagram of FIG. 3." See column 2, lines 20-22.



"The 'H' bridge configuration is composed of four semiconductor switches 12, 14, 16 and 18, a power supply 22, load voltage feedback circuitry 26, 28, 30 and 32, and a load 20. Semiconductor switches 12, 14, 16 and 18 may be composed of MOS transistors, load voltage feedback circuitry 26, 28, 30 and 32 may be composed of operational amplifiers, and load 20 may be an inductive load such as a bi-directional motor." See column 2, lines 20-31. "The flyback control circuit 10 of FIG. 4a is composed of a...transistor 12...with ...a gate coupled to...an output of operational amplifier 32 (hereafter referred to as op-amp)...." See column 2, lines 31-41. "Transistor 18 has a gate coupled to the output of op-amp 30...." See column 2, lines 43-45. "A third transistor 14 has...a gate coupled to...an output of op-amp 26...." See column 2, lines 45-51. "Transistor 16 has a gate coupled to the output of op-amp 28...." See column 2, lines 53-55. Four operational amplifiers (26, 28, 30, and 32) are shown and described.

Grounds of Rejection to be Reviewed on Appeal

Claims 10, 13 and 22 stand rejected as being anticipated under 35 U.S.C. § 102 (b) by Sziebert, U.S. Patent No. 6,064,174.

Claims 10, 11, 13 and 22 stand rejected as being anticipated under 35 U.S.C. § 102 (b) by Skelton et al., U.S. Patent No. 5,257,175.

Argument

I. The Sziebert Patent Does Not Anticipate the Claimed Invention.

Claims 10, 13, and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Sziebert, U.S. Patent No. 6,064,174 ("Sziebert"). Independent claim 10 is directed toward "[a] voice coil motor control circuit for controlling current through a voice coil motor". The voice coil motor circuit comprises "a first power amplifier circuit comprising...a **single operational amplifier**...and a feedback network" and "a second power amplifier circuit comprising...a **single operational amplifier**...and a feedback network". In the first power amplifier circuit, the "single operational amplifier [is] connected to...control regions of the first and third transistors". In the second power amplifier circuit, the "single operational amplifier [is] connected to...the control regions of the second and fourth transistors".

Sziebert fails as an anticipatory reference for at least the reason that it does not disclose "a first power amplifier circuit comprising...a **single operational amplifier** connected to...the **control regions of the first and third transistors**" and "a second power amplifier circuit comprising...a **single operational amplifier**...connected to the **control regions of the first and third transistors**". Regarding Sziebert, the Examiner stated in finally rejecting the claim at issue that:

> ...the recited "first power amplifier circuit" is the combination of **single operation amplifier 82** and the feedback network from the output of amplifier 82 through FET 72, through the voice coil motor and back to amplifier 82 **through amp 100**.

See January 25, 2005 Office Action, paragraph 3 (emphasis added).

This argument ignores the fact that no **single operational amplifier** of Sziebert is connected to the control regions of the first and third (or second and fourth) transistors of an H-bridge circuit. Regarding this point, the Examiner urges "that the amplifier 82 is also connected to the first VCM node and control regions of the first and third transistors 72 and 76 (i.e., **connected through amplifier 86**)." Id. Thus, the Examiner admits that Sziebert requires at least **two** operation amplifiers for first and third transistors 72 and 76, and **not a single** operational amplifier as recited by claim 10. The claim language cannot be avoided by drawing an imaginary box that excludes low-side amplifier 86 from the power amplifier circuit, but which puts it in the path between high-side amplifier 82 and low-side transistor 76.

The Examiner further urges that the recited feedback network of claim 10 is met by circuitry that includes "amp 100". This statement is another admission that the power amplifier circuit of Sziebert includes more than a single operational amplifier. A circuit that includes a feedback network with an amplifier therein, in addition to its so-called "single operational amplifier", by definition fails to meet the explicit language of claim 10 that the power amplifier circuit include only a single operational amplifier.

For at least these reasons, Sziebert does not anticipate the invention of claim 10. Because dependent claims 13 and 22 depend from allowable independent claim 10, claims 13 and 22 are likewise allowable. The rejection of claims 10, 13, and 22 under 35 U.S.C. § 102(b) over Sziebert should accordingly be withdrawn.

II. The Skelton Patent Does Not Anticipate the Claimed Invention.

Claims 10, 11, 13, and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Skelton et al., U.S. Patent No. 5,257,175 ("Skelton"). In rejecting claim 10 as being anticipated by Skelton, the Examiner applies "the same type of analysis" as used with respect to Sziebert. See January 25, 2005 Office Action, paragraph 4. Thus, for the same reasons that Sziebert fails as an anticipatory reference, so too does Skelton fail to anticipate claim 10.

Like Sziebert, Skelton fails as an anticipatory reference for at least the reason that it does not disclose "a first power amplifier circuit comprising...a **single operational amplifier** connected to...the **control regions of the first and third transistors**" and "a second power amplifier circuit comprising...a **single operational amplifier**...connected to the **control regions of the first and third transistors**". No **single operational amplifier** of Skelton is connected to the control regions of the first and third (or second and fourth) transistors of an H-bridge circuit.

Again, the Examiner ignores the plain language of claim 10 and here urges that "'the first power amplifier circuit' can be considered the combination of one of amplifiers 30, 32 and the feedback network connected between the input nodes 42, 44 and the selected amplifier". See January 25, 2005 Office Action, paragraph 4. But, looking to FIG. 4a of Skelton, **amplifier 30** connects to the control region of switch 12 only **through amplifier 32**. Similarly, **amplifier 32** connects to the control region of switch 18 only **through amplifier 30**. Thus, the power amplifier circuit necessarily includes at least **two** operational amplifiers, and **not a single** operational amplifier as recited by claim 10.

Further, Skelton does not teach a feedback network **connected to the first and second input signal nodes** and the operational amplifier as recited in claim 10. Here, the

Examiner urges that "the feedback network would be between node 44 and the inverting input of amplifier 32 (through diode 34, and FET 12)." Id. But this so-called feedback network is not connected to node 42 and fails to meet the plain language of claim 10.

For at least these reasons, Skelton does not anticipate the invention of claim 10. Because dependent claims 11, 13, and 22 depend from allowable independent claim 10, claims 11, 13, and 22 are likewise allowable. The rejection of claims 10, 11, 13, and 22 under 35 U.S.C. § 102(b) over Skelton should accordingly be withdrawn.

III. Conclusion.

In view of the above comments, it is respectfully requested that the appeal of claims 10, 11, 13, and 22 be granted, so that all pending claims 1-11 and 13-22 of this application are allowed.

Respectfully submitted,
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DMK:SLR

Appendix A

CLAIMS ON APPEAL (10, 11, 13, and 22)

10. (Rejected) A voice coil motor control circuit for controlling current through a voice coil motor, the control circuit comprising:

first and second input signal nodes for receiving input signals;

first and second voice coil motor nodes for connection to the voice coil motor;

an H-bridge circuit comprising:

a first transistor having a conduction path connected between a first voltage supply node and the first voice coil motor node, the first transistor further having a control region for controlling conduction through the conduction path;

a second transistor having a conduction path connected between the first voltage supply node and the second voice coil motor node, the second transistor further having a control region for controlling conduction through the conduction path;

a third transistor having a conduction path connected between the first voice coil motor node and a second voltage supply node, the third transistor further having a control region for controlling conduction through the conduction path; and

a fourth transistor having a conduction path connected between the second voice coil motor node and the second voltage supply node, the fourth transistor further having a control region for controlling conduction through the conduction path;

a first power amplifier circuit comprising:

a single operational amplifier connected to the first voice coil motor node and the control regions of the first and third transistors; and

a feedback network connected to the first and second input signal nodes and the operational amplifier; and

a second power amplifier circuit comprising:

a single operational amplifier connected to the second voice coil motor node and the control regions of the second and fourth transistors;

and

a feedback network connected to the first and second input signal nodes and the operational amplifier.

11. (Rejected) The control circuit of claim 10 wherein each of the transistors are NDMOS transistors having a source, a drain, a gate and a body, wherein the source is connected to the body, the conduction path is between the drain and the source, and the gate is the control region.

13. (Rejected) The control circuit of claim 10 wherein each of the feedback networks is a resistive feedback circuit for setting the gain and output voltage of the corresponding power amplifier.

22. (Rejected) The control circuit of claim 10 wherein the control circuit is implemented as an integrated circuit (IC).